Integrated Device Technology, Inc.
2975 Stender Way, Santa Clara, CA - 95054

PRODUCT/PROCESS CHANGE NOTICE (PCN)

PCN #: **G-0303-04** DATE: 4/15/2003
Product Affected: TSSOP and TVSOP packages
(see attachment for affected part #s).

Date Effective: 7/15/2003

MEANS OF DISTINGUISHING CHANGED DEVICES:
- ☐ Product Mark
- ☐ Back Mark
- ■ Date Code — Lot Number or Date Code
- ☐ Other

Contact: Geoffrey Cortes
Title: Manager, Corporate Quality & Reliability
Phone #: (408) 492-8321
Fax #: (408) 727-2328
E-mail: Geoffrey.Cortes@idt.com

Attachment:: ■ Yes ☐ No

Samples: Available upon request

DESCRIPTION AND PURPOSE OF CHANGE:
- ☐ Die Technology
- ☐ Wafer Fabrication Process
- ☐ Assembly Process
- ☐ Equipment
- ■ Material
- ☐ Testing
- ☐ Manufacturing Site
- ☐ Data Sheet
- ☐ Other

IDT has qualified the TSSOP and TVSOP package families using new mold compound Sumitomo EME-G700 series and a new die attach material Ablestik 8290. This notification is to advise our customer of adding these new assembly materials. The new mold compound and die attach material has an improved moisture performance at 260ºC. Please see attachment for qualification data and additional details.

RELIABILITY/QUALIFICATION SUMMARY:
Please see attached reliability qualification data.

CUSTOMER ACKNOWLEDGMENT OF RECEIPT:
IDT records indicate that you require written notification of this change. Please use the acknowledgement below or E-Mail to grant approval or request additional information. If IDT does not receive acknowledgement within 30 days of this notice it will be assumed that this change is acceptable.
IDT reserves the right to ship either version manufactured after the process change effective date until the inventory on the earlier version has been depleted.

Customer: ______________________ ☐ ***Approval for shipments prior to effective date.***

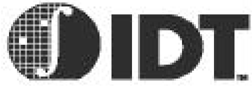
Name/Date: ______________________ E-Mail Address: ______________________

Title: ______________________ Phone# /Fax# : ______________________

CUSTOMER COMMENTS: ______________________

IDT ACKNOWLEDGMENT OF RECEIPT:

RECD. BY: ______________________ DATE: ______________________



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PRODUCT/PROCESS CHANGE NOTICE (PCN)

ATTACHMENT - PCN #: G-0303-04

PCN Type: Assembly Material Change
Data Sheet Change: None
Detail Of Change: A new mold compound and a new die attach material has been qualified for TSSOP and TVSOP package families. IDT will maintain the same moisture sensitivity level and package peak temperature. Please refer to shipping label for moisture sensitive level.
The details are as follow:

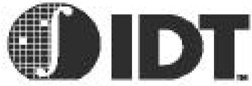
Description	Material	
	Existing	Add
Mold compound material	Shinetsu KMC 184 Sumitomo 6300 series 7320CR and 7351LP	Sumitomo EME-G700 series
Die attach material	Ablestik 84-1LMISR4, 8340, 8390	Ablestik 8290

The list of the effected products are as follows:

Package family	Package Nomenclature	Pin Count	Ordering part numbers ends with		
			Commercial Grade	Industrial Grade	Tape & Reel (shipping method)
TSSOP	PA48	TSSOP-48 pin	PA	PAI	PA8, PAI8
	PA56	TSSOP-56 pin	PA	PAI	PA8, PAI8
	PA64	TSSOP-64 pin	PA	PAI	PA8, PAI8
	PG14	TSSOP-14 pin	PA, PG	PAI, PGI	PA8, PAI8, PG8, PGI8
	PG16	TSSOP-16 pin	PA, PG	PAI, PGI	PA8, PAI8, PG8, PGI8
	PG20	TSSOP-20 pin	PA, PG	PAI, PGI	PA8, PAI8, PG8, PGI8
	PG24	TSSOP-24 pin	PA, PG	PAI, PGI	PA8, PAI8, PG8, PGI8
	PG28	TSSOP-28 pin	PG	PGI	PG8, PGI8
TVSOP	PF48	TVSOP-48 pin	PF	PFI	PF8, PFI8
	PF56	TVSOP-56 pin	PF	PFI	PF8, PFI8

Conversion schedule (Estimated):

Please contact your local field sales representative for part number list, sample availability and production shipments.



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PRODUCT/PROCESS CHANGE NOTICE (PCN)

ATTACHMENT - PCN #: G-0303-04

Qualification Plan #: P02-10-06 / P02-03-03 / P02-11-09
Test Vehicle: QS3VH16245 / 74CBTLV16800 / 74LVC16901A
Qualification Test Plan and Results:

Test Description	Test Method	Sample Size / # of Fails	Test Results TSSOP QS3VH16245 (SS / # of Fails)	Test Results TVSOP 74CBTLV16800 (SS / # of Fails)	Test Results TSSOP 74LVC16901A (SS / # of Fails)
* High Accelerated Stress Test (Biased, 130 °C/85% RH, 100 Hrs)	EIA/JESD22-A110	45/0	45/0	45/0	45/0
* Temperature Cycling (-65 °C to 150 °C, 500 cyc)	JESD22-A104	45/0	45/0	45/0	45/0
* Auto Clave (121 °C, 2 ATM, 168 Hrs)	EIA/JESD22-A102	45/0	45/0	45/0	45/0
High Temp Bake (150 °C, 1000 Hrs)	JESD22-A108	77/0	N/A	N/A	77/0
Moisture Sensitivity Classification (Note 1)	JEDEC J-STD-020	90/0	90/0	90/0	90/0
Internal Visual Inspection	MIL-STD-883, M2010	5/0	5/0	5/0	5/0
External Visual Inspection	MIL-STD-883, M2009	25/0	25/0	25/0	25/0
X-ray Examination	Per IDT Specification	45/0	45/0	45/0	45/0
Bond Pull	MIL-STD-883, M2011	5/0	5/0	N/A	5/0
Bake & Ball Shear Strength	EIA/JESD22-B116	5/0	5/0	N/A	5/0
Physical Dimensions	MIL-STD-883, M2016	5/0	5/0	N/A	5/0
Die Shear Strength	MIL-STD-883, M2019	5/0	5/0	N/A	5/0
Solderability	MIL-STD-883, M2003	5/0	5/0	N/A	5/0

Notes: * Test requires moisture pre-conditioning sequence.
1. There is no change in Moisture Sensitivity Level.

SUMITOMO BAKELITE
SUMIKON®

EME-G700

MULTI-AROMATIC RESIN
Br/Sb FREE
FOR Pb FREE PKG
LOW WATER ABSORPTION

EME-G700

TYPICAL PROPERTIES:

ITEM	TEST METHOD	UNIT	VALUES
SPIRAL FLOW	SB-U-03-003	cm	110
GEL TIME (at 175°C)	SB-U-03-005	sec	30
THERMAL EXPANSION ∝1	SB-U-02-002	X 10^{-5} 1/°C	1.2
THERMAL EXPANSION ∝2	SB-U-02-002	X 10^{-5} 1/°C	4.9
Tg	SB-U-02-002	°C	130
THERMAL CONDUCTIVITY	SB-U-02-004	W/m •°C	88x 10^{-2}
FLEXURAL STRENGTH	SB-U-01-001	N/ mm^2	
(at 25°C)			170
(at 240°C)			21
FLEXURAL MODULUS	SB-U-01-002	X 10^2 N/mm^2	
(at 25°c)			190
(at 240°C)			6.0
SPECIFIC GRAVITY	SB-U-03-018	--------------	1.95
VOLUME RESISTIVITY (at 150°c)	SB-U-00-004	Ω - cm	1 x 10^{12}
UL FLAME CLASS	SB-U-03-003	UL-94	V-0
WATER ABSORPTION (boiling, 24 h)	SB-U-03-002	% weight gain	0.15
EXTRACTED Na^+	SB-U-04-043	ppm	1
EXTRACTED Cl^-	SB-U-04-043	ppm	5

TYPICAL, NOT GUARANTEED PROPERTIES

MOLDING AND POST MOLD CURE CONDITIONS:

	STANDARD	RANGE
TRANSFER PRESSURE	80 x10^6 Pa	70-120 x10^6 Pa
MOLD TEMPERATURE	180°C	175-185°C
CURE TIME (C or A)#	A/90 sec	70-120 sec
POST-MOLD CURE TEMP	175°C	170-180°C
POST-MOLD CURE TIME	6 h	4-8 h

#Conventional or Auto

rev. Nov.'00

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SUMITOMO BAKELITE CO., LTD.
Tennoz Parkside Building, 5-8 Higashi-Shinagawa, 2-Chome Shinagawa-ku, Tokyo 140, Japan

ABLEBOND® 8290

MEDIUM STRESS DIE ATTACH ADHESIVE

DESCRIPTION

Ablebond® 8290 medium stress die attach adhesive is designed for high reliability leadframe packaging applications. This electrically conductive adhesive offers improved JEDEC performance and can be used in a variety of package sizes.

FEATURES

- Low stress
- Improved JEDEC performance
- Use for a variety of die sizes

TYPICAL UNCURED PROPERTIES		TEST DESCRIPTION	TEST METHOD
Filler Type	Silver		
Viscosity @ 25°C	9,000 cP	Brookfield CP-51 @ 5 rpm	PT-42
Thixotropic Index	5.9	Viscosity @ 0.5 rpm/Viscosity @ 5 rpm	PT-61
Work Life @ 25°C	24 hours	25% increase in viscosity @ RT	PT-59
Estimated Storage Life @ -40°C	1 year		PT-13
CURE PROCESS DATA			
Weight Loss on Cure	2.5%	10mm x 10mm Si die on glass slide	PT-80
Recommended Cure Condition	Ramp 30 minutes to 175°C and hold 15 minutes		
Alternate Cure Condition[1]	Ramp 30 minutes to 175°C and hold 60 minutes		

[1] Alternate cure recommended for larer die sizes for void minimization.

Typical properties are not intended to be used as specification limits. If you need to write a specification, ask for our Standard Release Specification.

12/01

PHYSIOCHEMICAL PROPERTIES - POST CURE			TEST DESCRIPTION	TEST METHOD
Ionics	Chloride	16 ppm	Teflon flask 5 gm sample	CT-13
	Sodium	12 ppm	20-40 mesh 50 gm DI water 100°C	
	Potassium	1 ppm	for 24 hours	
Glass Transition Temperature		38°C	TMA penetration mode	MT-14
Coefficient of Thermal Expansion			TMA expansion mode	MT-9
	Below Tg	81 ppm/°C		
	Above Tg	181 ppm/°C		
Dynamic Tensile Modulus			Dynamic mechanical thermal analysis using <0.5mm thick sample	MT-12
	@ 25°C	3100 MPa (440 Kpsi)		
	@ 150°C	140 MPa (20 Kpsi)		
	@ 250°C	120 MPa (17 Kpsi)		
Moisture Absorption @ Saturation		0.71%	Dynamic vapor sorption after 85°C/85% RH exposure	PT-65
THERMAL ELECTRICAL PROPERTIES - POST CURE				
Thermal Conductivity		1.6 W/mK	Laser Flash	PT-96
Volume Resistivity		0.008 ohm-cm	4-point probe	PT-46
MECHANICAL PROPERTIES - POST CURE				
Die Shear Strength @ 25°C		15 kg_f /die	2x2mm Si die Ag/Cu LF (80 x 80 mil)	MT-4
Chip Warpage vs. Post Cure Thermal Process			12.7 x 12.7 x 0.38 mm Si die (500 x 500 x 15mil) on 0.2mm thick leadframe	MT-15
Post Cure	*+ Post Mold Bake* (4 hours @ 175°C)			
18 µm	32 µm			

Typical properties are not intended to be used as specification limits. If you need to write a specification, ask for our Standard Release Specification.

APPLICATION GUIDELINES

SHIPMENT

This Ablestik product is packed and shipped in dry ice at -80°C. Inside every dry ice shipment of Ablestik's products is a small packet containing the ABLECUBE. This is a small blue cube which retains its shape at -40°C. If the ABLECUBE is exposed to temperatures higher than -40°C, the cube will melt.

Please check the state of the ABLECUBE to ensure the integrity of the shipment. If the ABLECUBE has melted upon Receiving Inspection, place the entire shipment in a -40°C freezer and contact your Ablestik Customer Service or Sales Representative.

UNPACKING

Transfer the syringes from the dry ice to a -40°C freezer without ANY delays. Freeze-thaw voids will form in the syringes if the syringes are repeatedly thawed and refrozen.

STORAGE

This Ablestik product must be stored at -40°C. The shelf life of the material is only valid when the material has been stored at the specified storage condition. Incorrect storage conditions will degrade the performance of the material in both handling (e.g. dispensing or screen printing) and final cured properties.

ABLEBOND® 8290

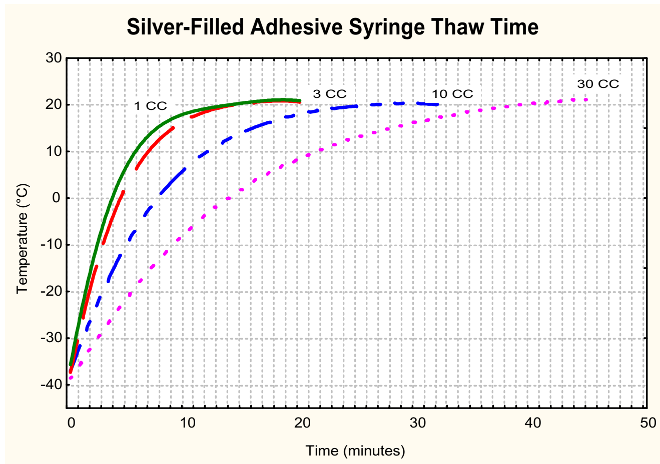
MEDIUM STRESS DIE ATTACH ADHESIVE

THAWING

Allow the container to reach room temperature before use. After removing from the freezer, set the syringes to stand vertically while thawing. Refer to Syringe Thaw Time chart below for the thaw time recommendation.

DO NOT open the container before contents reach ambient temperature. Any moisture that collects on the thawed container should be removed prior to opening the container.

DO NOT re-freeze. Once thawed to room temperature, the adhesive should not be refrozen.



ADHESIVE APPLICATION

Thawed adhesive should be immediately placed on dispense equipment for use. If the adhesive is transferred to a final dispensing reservoir, care must be exercised to avoid entrapment of contaminants and/or air into the adhesive. Adhesive must be completely used within the product's recommended worklife of 24 hours. Silver-resin separation may occur if the adhesive is left out at ambient beyond the recommended worklife.

Apply enough adhesive to achieve a 25-50 µm (1-2 mil) wet bondline thickness, dispensed with approximately 25% - 50% filleting on all sides of the die. Alternate dispense amounts may be used depending on the application requirements. Star or cross-shaped dispense patterns will yield fewer bondline voids than the matrix style of dispense pattern. Contact Ablestik Technical Service Department for detailed recommendation on adhesive application, including dispensing.

CURE

Ablebond 8290 adhesive can be cured in conventional box ovens per the recommended cure condition. Refer to the Cure Process Data section of the Technical Data Sheet for the recommended cure cycles.

AVAILABILITY

Ablebond adhesives are packaged in syringes or jars per customer specification. Available package sizes range from 1cc to 30cc and 1 ounce to 1 pound. For details, refer to the Ablestik Standard Package Data Set or contact your Customer Service representative.

CAUTION This product may cause skin irritation in sensitive persons. Avoid skin contact. If contact does occur, wash area immediately with soap and water. Please refer to Material Safety Data Sheet (OSHA) for more details.

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